REMARKS

Claims 1-16 are all the claims pending in the application. Claims 1-13 are rejected. Claims 14-16 are allowed.

As a preliminary matter, Applicants and their representatives wish to thank Examiner Lee and SPE Kizou for the courtesy extended during a personal interview conducted on January 22, 2004. Applicants believe that a further mutual understanding of the invention and the distinctions over the prior art was reached. Applicants now submit that all of the claims should be allowed for the following reasons.

Claim Rejections - 35 U.S.C. § 103

Claims 1-13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Luczycki et al (6,523,069) in view of Donahue et al (6,101,180). The Examiner looks to the newly cited patent to Luczycki et al for a teaching in Fig. 6 of a plurality of routers 60A-60N, each associated with a plurality of requesting terminals. The Examiner asserts that the multicast source 54 is a "route server," as claimed, in that it is in communication with a plurality of routers to establish a multicast tree . This rejection is traversed for at least the following reasons.

The Present Invention

As previously explained in earlier amendments, the present invention concerns the provision of internet protocol (IP) multicast services on mesh satellite networks, of the type illustrated in Fig. 1 of the application. In particular, the invention is focused on avoiding the incorporation in each terminal of the needed support for multicast IP routing in a mesh satellite network. The invention avoids the need for each terminal having a router to periodically communicate with all the terminal/routers in the mesh, thereby using satellite bandwidth, as well as significant CPU and memory resources.

The present invention uses a centralized route server to run the multicast routing protocols, thereby avoiding the need to use bandwidth for routing multicast IP traffic over meshed satellite networks. While Fig. 1 illustrates a connection of satellite TDMA terminals

through multicast enabled routers, as in Luczycki et al, the communication of routing information is significantly different. External routers establish multicast routing sessions only with a route-server, and not with the other terminals. Thus, multicast routing packets (not communication packets) originated by an external router attached to a terminal will be conveyed transparently to the common route server. The route server creates and stores multicast group table information for all routers. The single route server then provides that information to the terminals so that multicast traffic can be directly transmitted from the ingress terminal to all the terminals in a group, without having to be relayed through the route server.

As illustrated in Fig. 1, the route server 40 is disposed at a master terminal 32 and is connected to a network control center 30, which communicates with the satellite 12 via the master terminal. Other terminals 16, 34; 18, 36 at separate ISPs are connected to various routers (52, 54, 58) for access to external equipment. As illustrated in Fig. 2, a master routing table is established in the RS 40 by communication among the RS and other routers 52, 54, 56, 58.

Unlike the prior art arrangement of Fig. 3, the invention permits a reduction in the number of slots required for routing information updates, as illustrated in Fig. 4. This reduction occurs because the routing information is exchanged only between each router and the route server 40, and not among all routers. This fundamental feature of the present invention is recited in the rejected claims, particularly claim 1.

In claim 1, the system has a plurality of terminals for providing IP multicast services as well as (1) a route server for establishing and maintaining routing information for a plurality of routers and (2) a controller operative to allocate broadcast burst to the terminals based on requests from the terminals via said route server. The requirement for the allocation of broadcast bursts based on requests from terminals "via said route server" is significant because it emphasizes the distinctive feature of the invention that information for such transmissions is exchanged only between external routers and the route server, and not among the external routers directly, as disclosed at page 7 of the present application.

Prior Art

In the Examiner's analysis supporting his rejection of claims 1-13, the Examiner looks to Luczycki et al, particularly Fig. 6, for an illustration of a plurality of terminals each connected to a router, and a route server. The flaw in this part of the Examiner's analysis is that there is no "route server" in Luczycki et al. All of the routers will exchange routing information in the same manner as in the conventional art.

The Examiner looks to the multicast source 54 as the route server. However, this is simply a source of traffic, and not of route information for distribution to all routers in the network. As explained at col. 5, lines 22-24, the "requested data stream is sent form the source 54 to the destination terminal 56A through the gateways in the multicast tree. There is no teaching or suggestion that the source 54 acts as a route server.

Indeed, the text at col. 5, lines 3-18 indicates that the multicast group, comprising virtual destination network address, is actively received and/or distributed by one of more multicast-enabled gateways, such as routers or switches, based on user requests. This is a teaching of the conventional distribution of route information in the network to setup the tree, from router to router, and not via a common server.

The Examiner admits that the Luczycki et al reference does not have a "controller" as claimed, i.e., operative to allocate broadcast bursts to terminals based on requests from the terminals via the route server. The Examiner's own admission shows that a route server cannot be found in Luczycki et al because, if there were one, the controller would necessarily have been disclosed as well, since the controller and route server

The Examiner looks to Donohue et al for a teaching of a file server coupled to a satellite for IP multicasting bursts of requested information to a plurality of local access points. The Examiner asserts that this teaching would lead one skilled in the art to use such file server in Luczycki et al. However, this begs the question as to whether the use of a route server is considered by any prior art reference. Clearly, neither Luczycki et al nor Donohue et al teach a

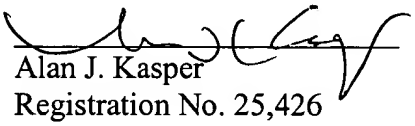
route server. Luczycki et al is admitted not to teach a controller, as claimed. Donohue et al, in a similar way, cannot and does not teach a controller that would support a route server, as claimed.

As to the dependent claims 2-13, the Examiner's analysis does not remedy the basic defect in the teachings of the two main prior art references.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Date: January 23, 2004